

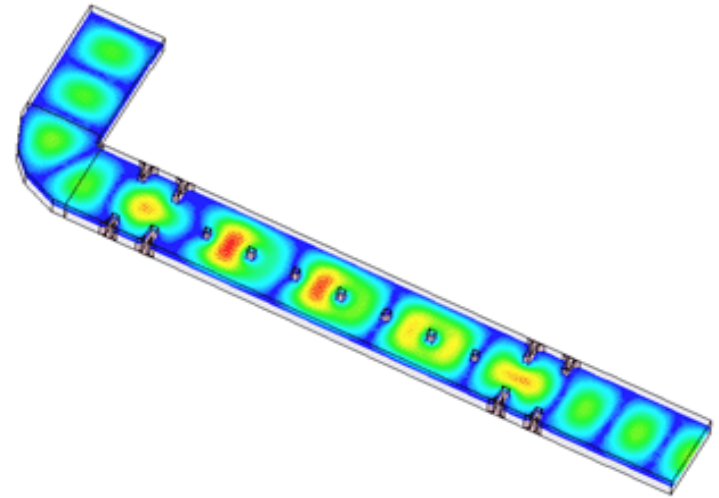
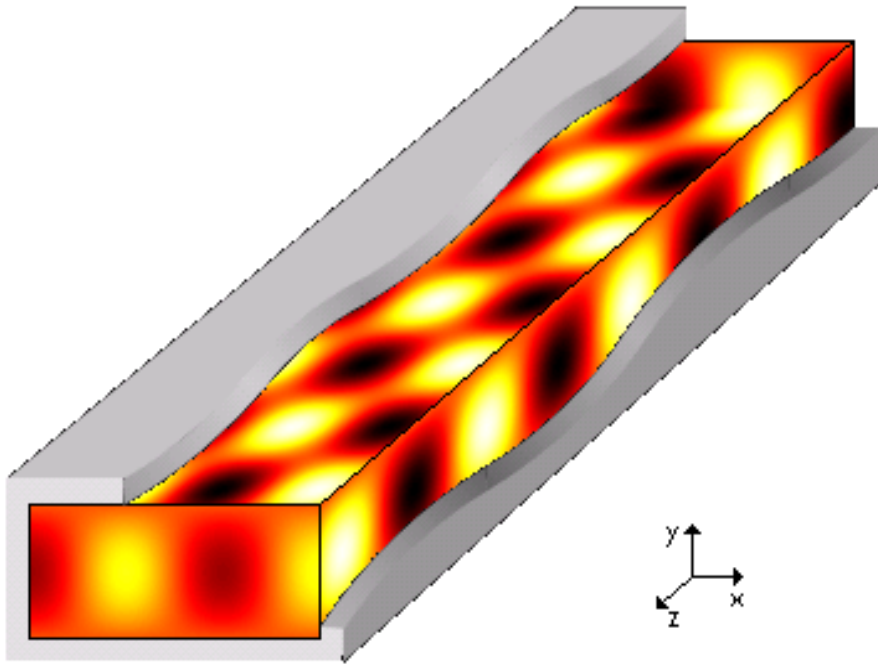
# TWIN ENGINEERS

*PRESENTATON ON  
WAVEGUIDE*

# INTRODUCTION

- A waveguide is a structure which guides waves, such as **electromagnetic waves** or **sound**
- There are different types of waveguide for each type of wave.
- The original and most common meaning is a hollow metal pipe used for this purpose.
- Waveguides differ in their geometry which can confine energy in one dimension such as in slab waveguides or two dimensions as in fiber or channel waveguides
- In addition different waveguides are needed to guide different frequencies: an **optical fiber** guiding **laser** (high frequency) will not guide **microwaves** (which have a much lower frequency).
- It is made by **MATERIAL 'Aluminum ,Brass ,Copper '**

# BASIC STRUCTURE



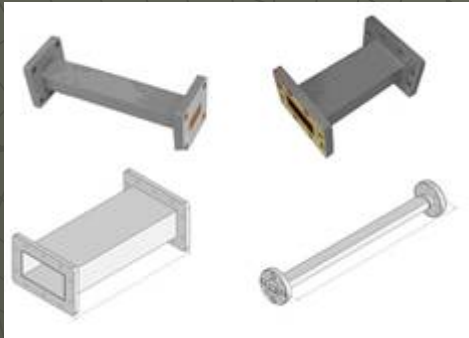
# APPLICATION

- Radio broadcasting
- Television
- Radar
- Sound reproduction
- Large telephone networks
- Analog and Digital computers
- Satellite Signal Receiving & transmitting

# STRAIGHT AND TWIST WAVEGUIDE

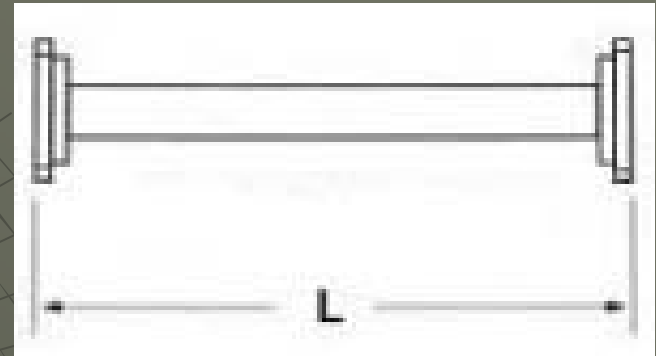
## Rectangular Straight Waveguide

0.7 TO 325.0 GHZ, VSWR=1.05



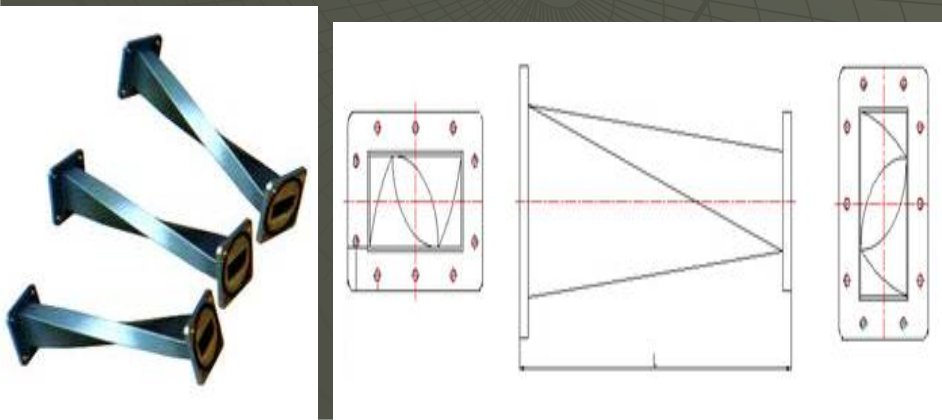
## Double Ridge Straight Waveguide

2.6 TO 40.0 GHZ, VSWR=1.15



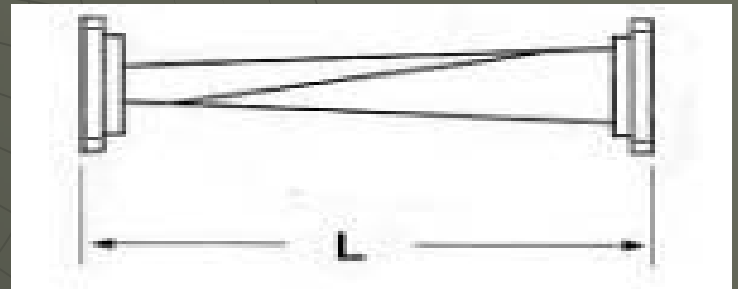
## Rectangular Twist Waveguide

1.70 TO 110 GHZ, VSWR=1.1



## Double Ridge Twist Waveguide

2.6 TO 40.0 GHZ, VSWR=1.25



# BAND WAVEGUIDE

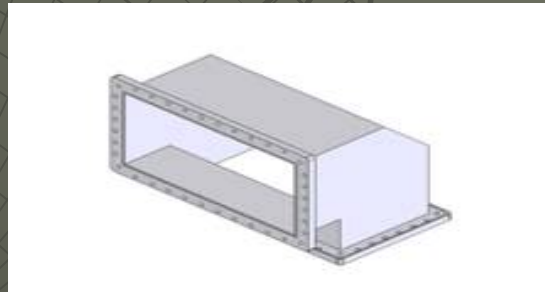
## Radius Bend Waveguide

- 90° E-Plane
- 1.70-110.0 GHZ
- VSWR=1.15



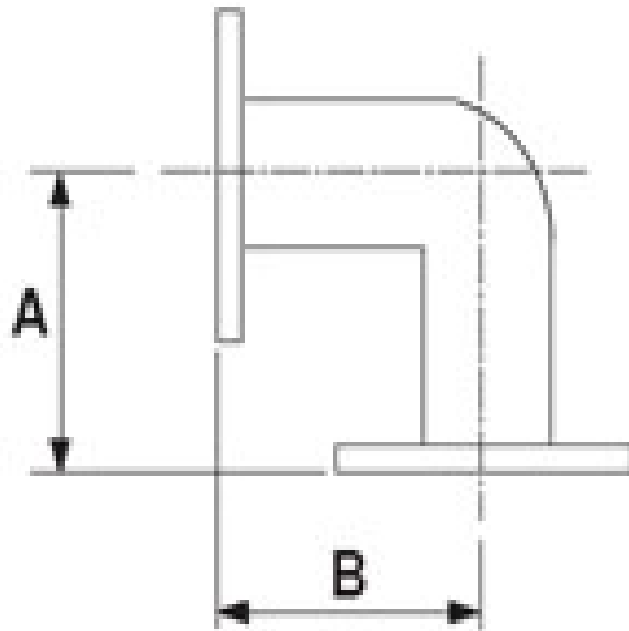
## Miter Bend Waveguide

- 90° E-Plane
- 0.75-40.0 GHZ
- VSWR=1.15



## Double Ridge Bend Waveguide

- 6.0-18.0 GHZ
- VSWR=1.20



- 90° H-Plane
- 1.70-110.0 GHZ
- VSWR=1.15



- 90° H-Plane
- 0.75-3.30 GHZ
- VSWR=1.15



# COXIAL ADAPTER

## ➤ Right Angle Waveguide to Coaxial Adapter

- 0.75-40.0 GHZ
- VSWR= 1.50



## ➤ Endlaunch Waveguide to Coaxial Adapter

- 1.70-40.0 GHZ
- VSWR=1.25



## ➤ Double Ridge Waveguide to Coaxial Adapter

- 2.6-40.0GHZ
- VSWR=1.50-1.80



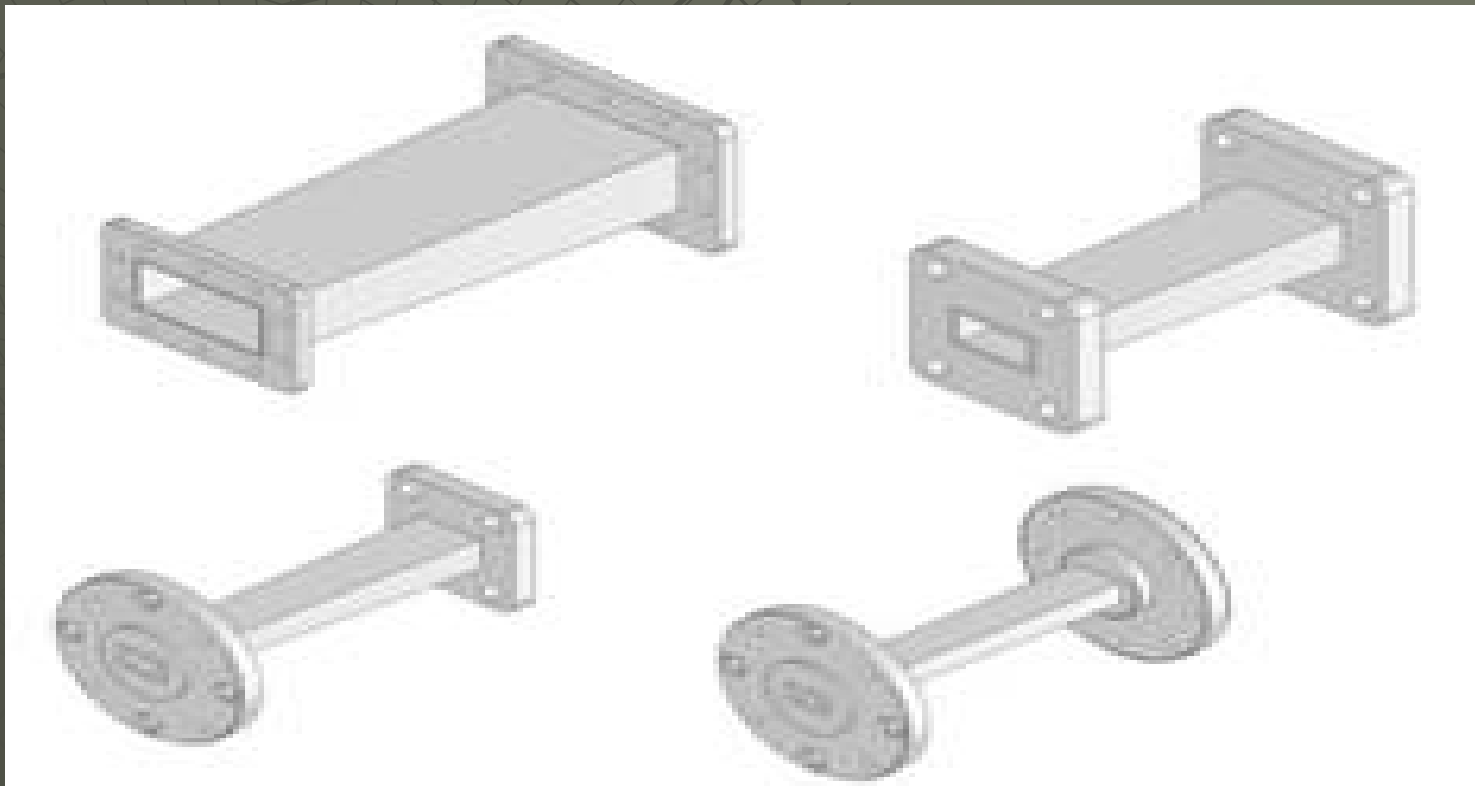
## ➤ High Power Double Ridge Waveguide

- 2.6-40.0 GHZ
- VSWR=1.50-2.0



# WAVEGUIDE TRANSITION

- 2.60-15.0 GHZ
- VSWR=1.10





# WAVEGUIDE COUPLER

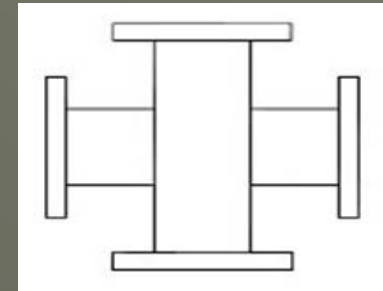
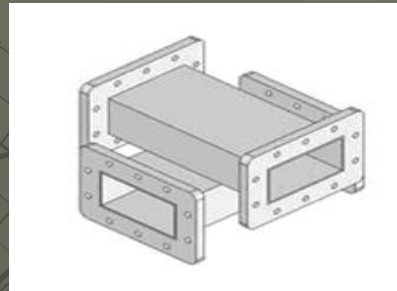
## ➤ Waveguide Cross Coupler

### ➤ A: W+C-XX Type

➤ 0.75-40.0 GHZ

➤ VSWR=MAIN LINE1.15

➤ SECONDLINE1.25

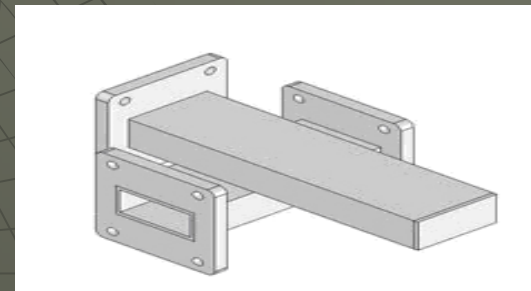


### ➤ B: WL+C-XX Type

➤ 0.75-40.0 GHZ

➤ VSWR=MAIN LINE1.15

➤ SECONDLINE1.25

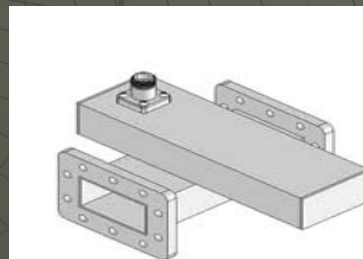


### ➤ C: WL+CN-XX Type

➤ 0.75-40.0 GHZ

➤ VSWR=MAIN LINE1.15

➤ SECONDLINE1.25



# WAVEGUIDE COUPLER

## ➤ Waveguide High Directional Coupler

### ➤ A: WC-XX Type

➤ 2.60-325.0 GHZ

➤ VSWR=MAIN LINE 1.15

➤ SECONDLINE 1.25

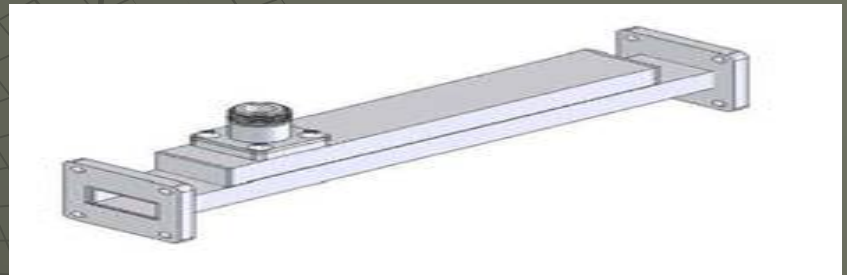


### ➤ B: WCN-XX Type

➤ 1.70-40.0 GHZ

➤ VSWR=MAIN LINE 1.15

➤ SECONDLINE 1.25

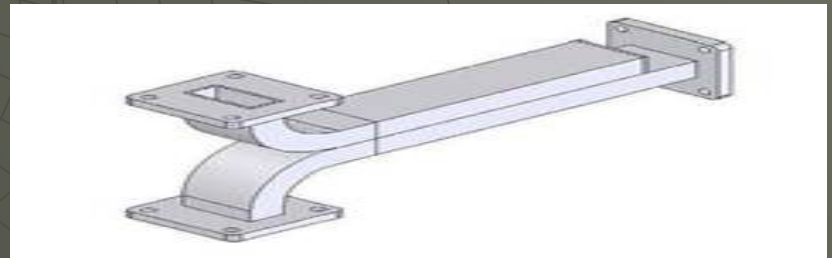


### ➤ C: WIC-XX Type

➤ 2.60-40.0 GHZ

➤ VSWR=MAIN LINE 1.25

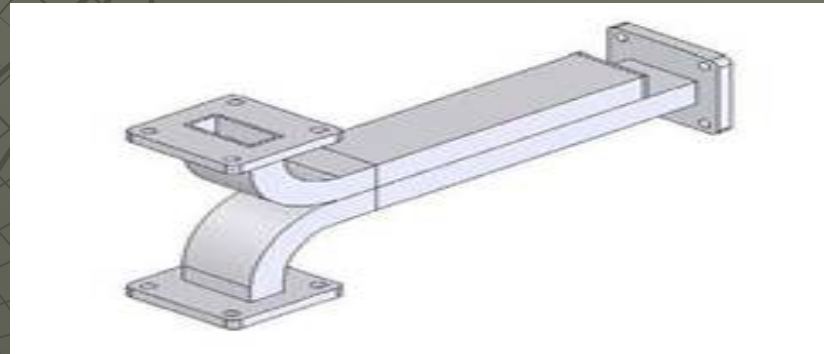
➤ SECOND LINE 1.50



# WAVEGUIDE COUPLER

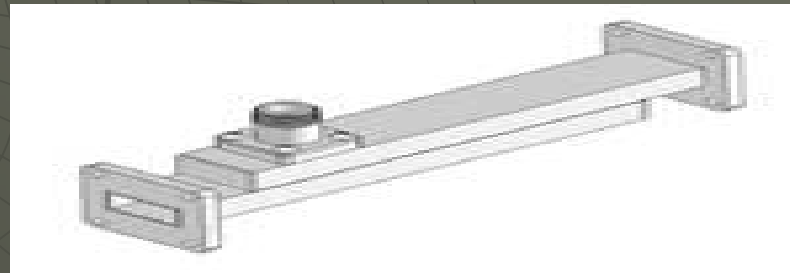
## ➤ D: WYC-XX Type

- 2.60-40.0 GHZ
- VSWR=MAIN LINE 1.15
- SECONDLINE 1.25



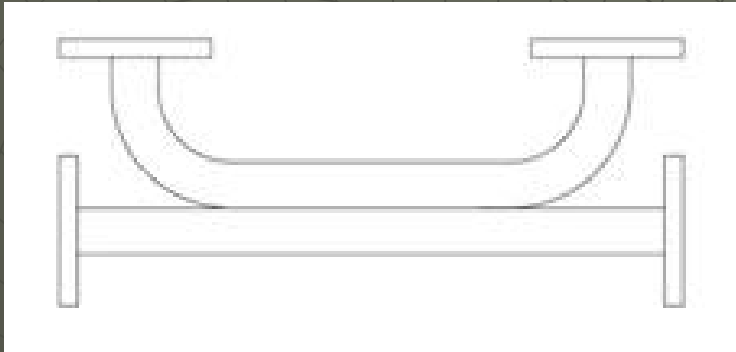
## ➤ E: WICN-XX Type

- VSWR=MAIN LINE 1.15
- SECONDLINE 1.25

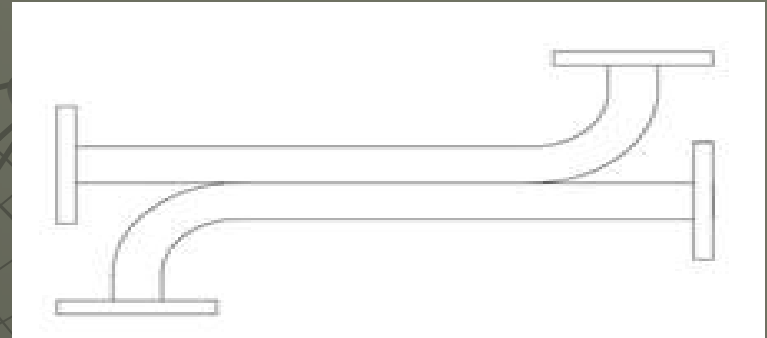


# TYPES OF COUPLER

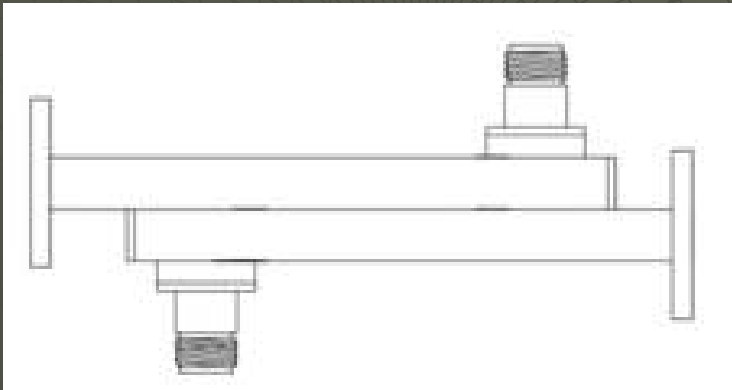
## Four Ports Dual Coupler



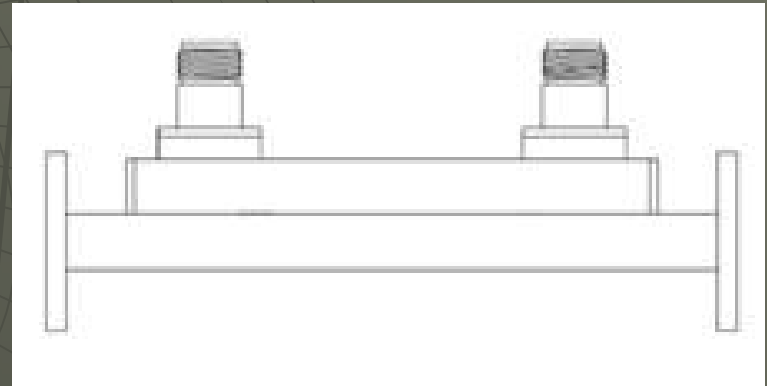
WUC Series



WXC Series



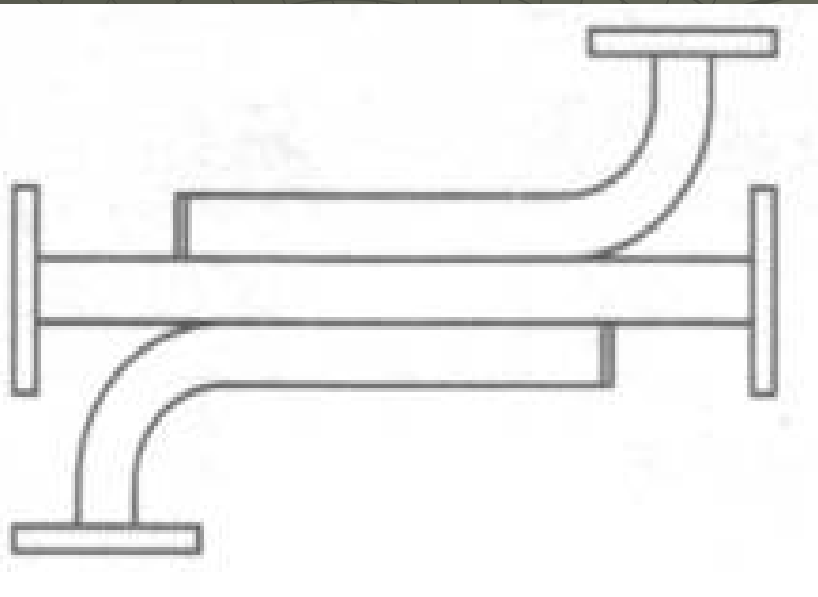
WXCN Series



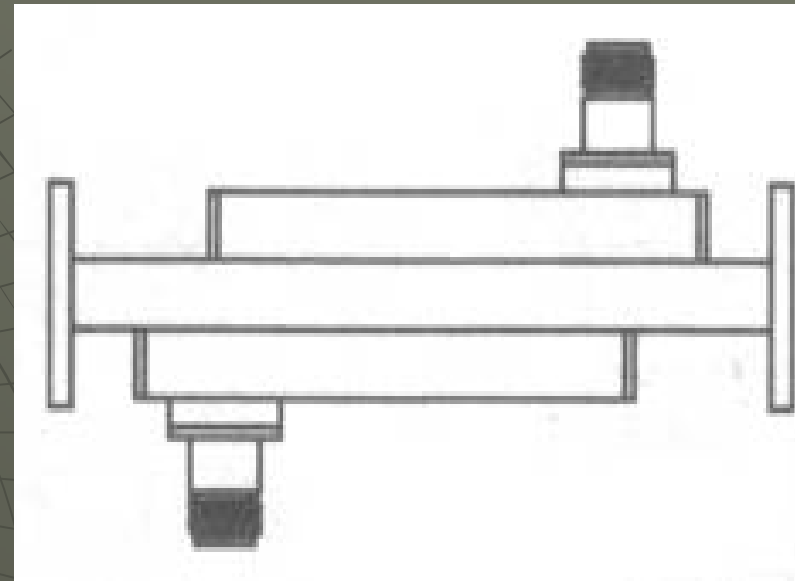
WUCN Series

# TYPES OF COUPLER

## Dual Directional Coupler



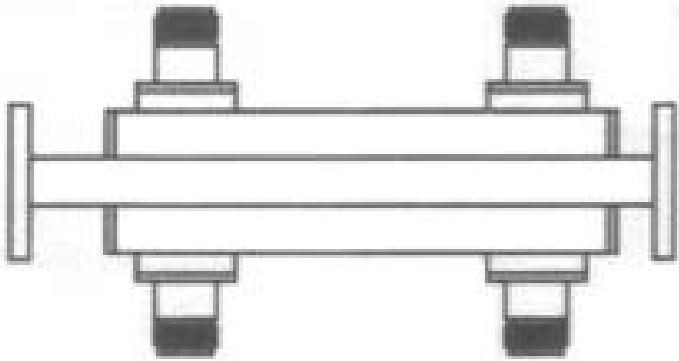
WDXC Series



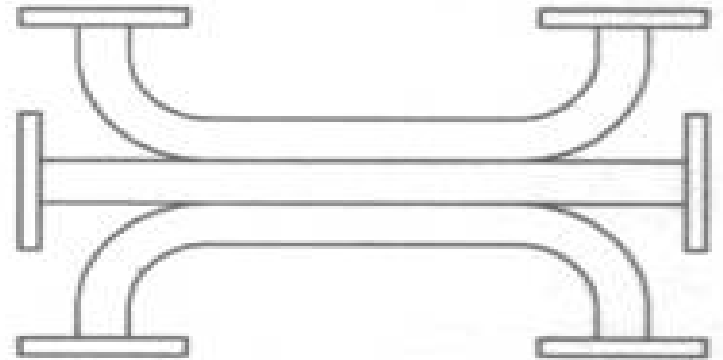
WDXCN Series

# TYPES OF COUPLER

## Six Ports Dual Coupler



WDUCN Series



WDUC Series

# TYPES OF COUPLER

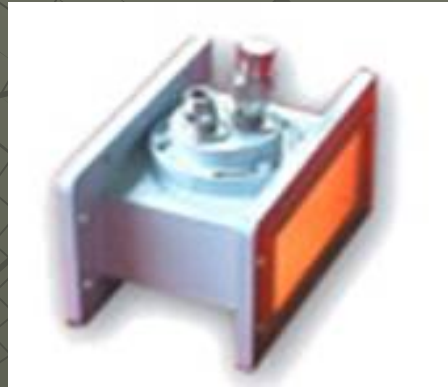
## ➤ Waveguide Loop Coupler

### ➤ A: WHC-XX Type

➤ 1.70-12.4 GHZ

➤ VSWR=MAIN LINE 1.15

➤ SECONDLINE 1.35

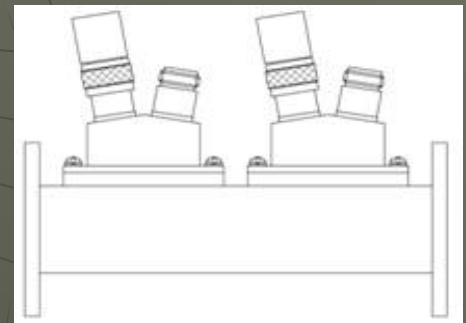


### ➤ B: WHHC-XX Type

➤ 1.70-12.4 GHZ

➤ VSWR=MAIN LINE 1.15

➤ SECONDLINE 1.35



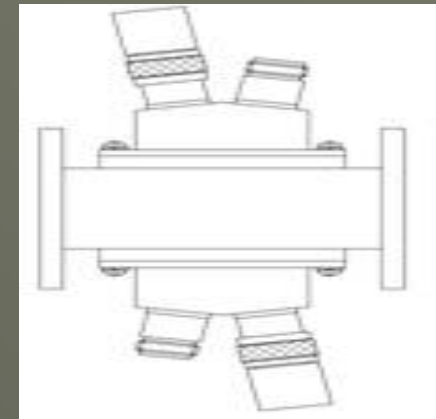
# TYPES OF COUPLER

## ➤ C: WDHC-XX Type

➤ 1.70-12.4 GHZ

➤ VSWR=MAIN LINE 1.15

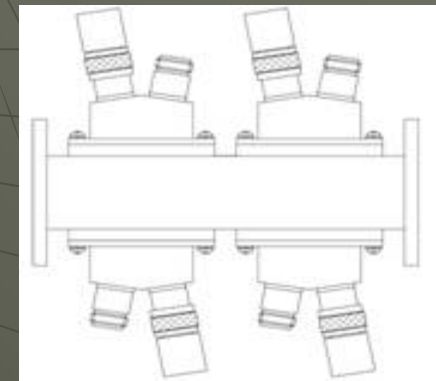
➤ SECONDLINE 1.35



## ➤ D: WDHHC-XX Type

➤ VSWR=MAIN LINE 1.15

➤ SECONDLINE 1.35



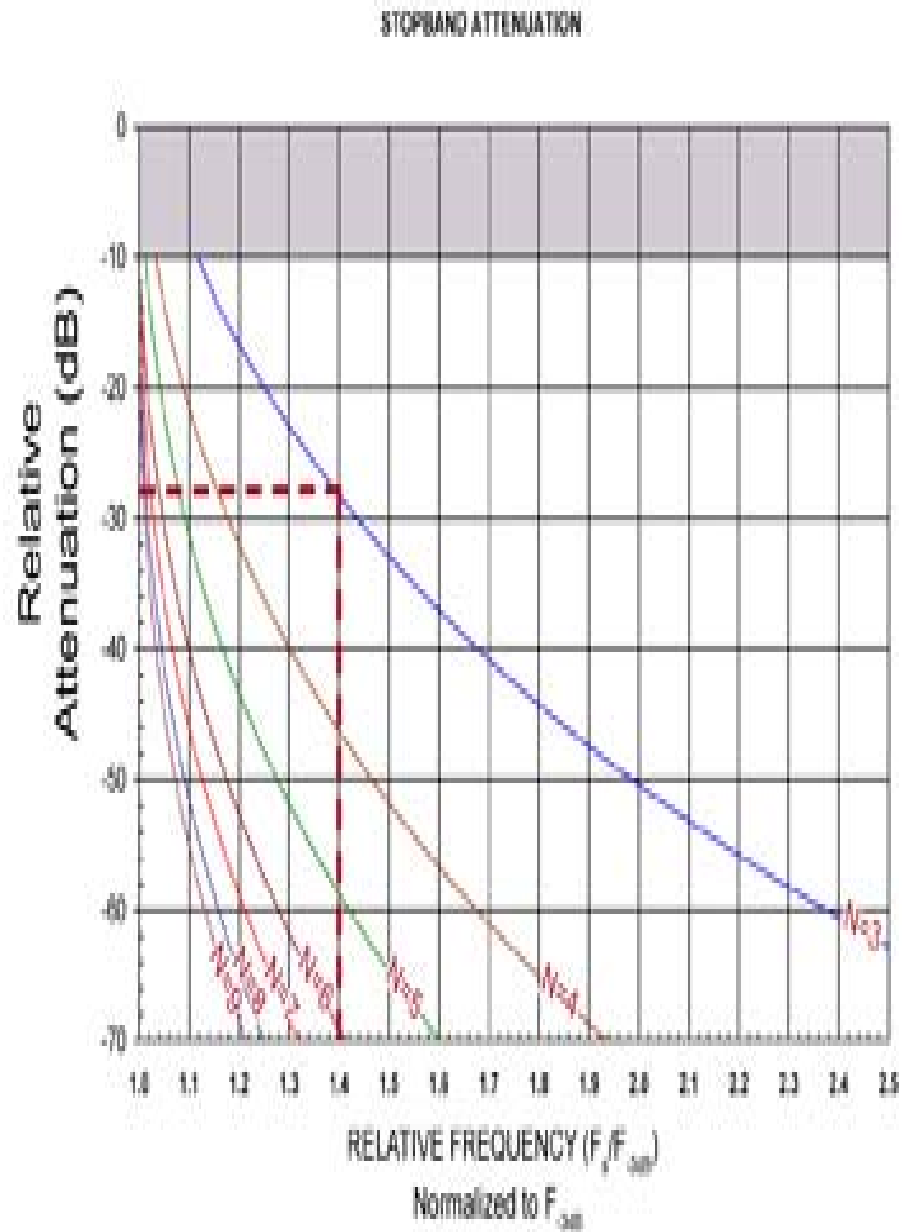


# Low Pass Filters

- ◆ **Microwave Filter** of Low pass filters offer superior performance in a small package for a wide range of applications.

SPECIFICATIONS				
Frequency (MHz)	VSWR typical	Average Power (Watts)	Impedance (ohms)	No. of Sections
0.2-10	1.5:1	15	50*	3-9
10-200	1.5:1	15	50*	3-9
150-1000	1.5:1	10	50*	3-9

# Low pass Filters



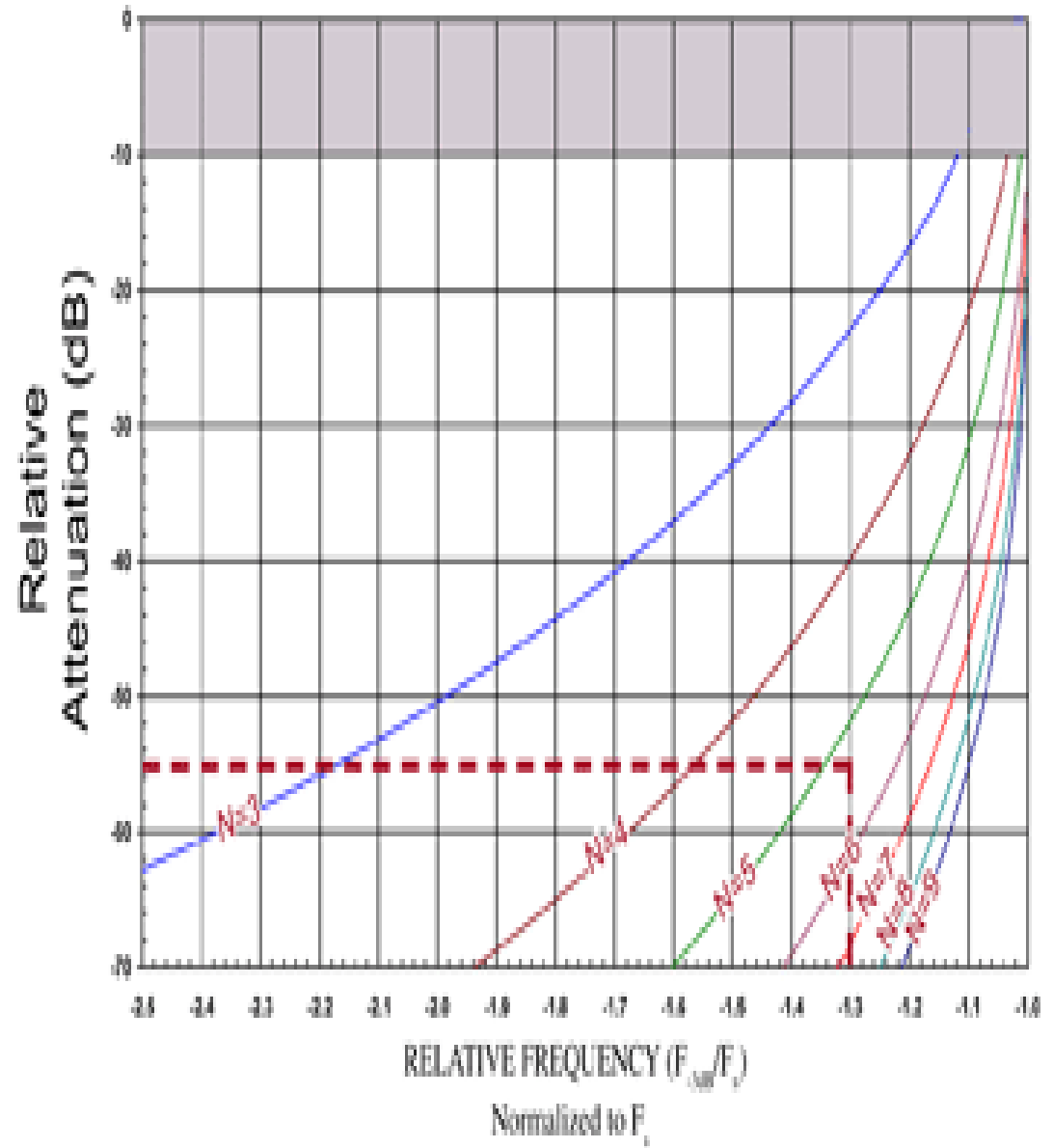
# Band Pass Filter

- ◆ Microwave Filter of miniature band pass filters utilize high quality components for narrow and wide band filter applications.

## SPECIFICATIONS

Frequency (MHz)	3 dB BW (percent)	VSWR typical	Average Power (Watts)	Impedance (ohms)	No. of Sections
0.5-500	3-50	1.5:1	15	50*	3-9

# Band pass Filters



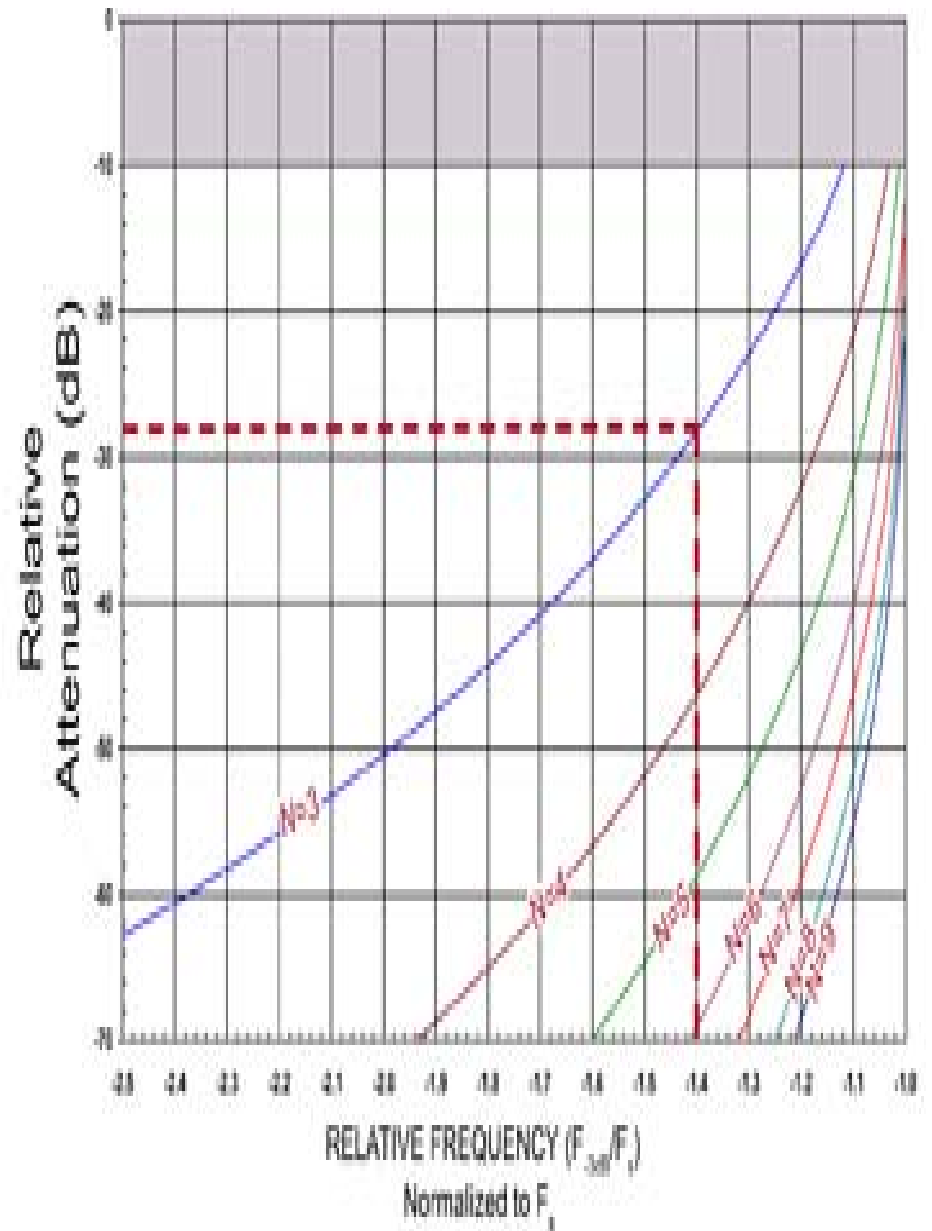
# High Pass Filters

- ◆ **Microwave Filter** of High pass filters offer superior performance in a small package for a wide range of applications.

## SPECIFICATIONS

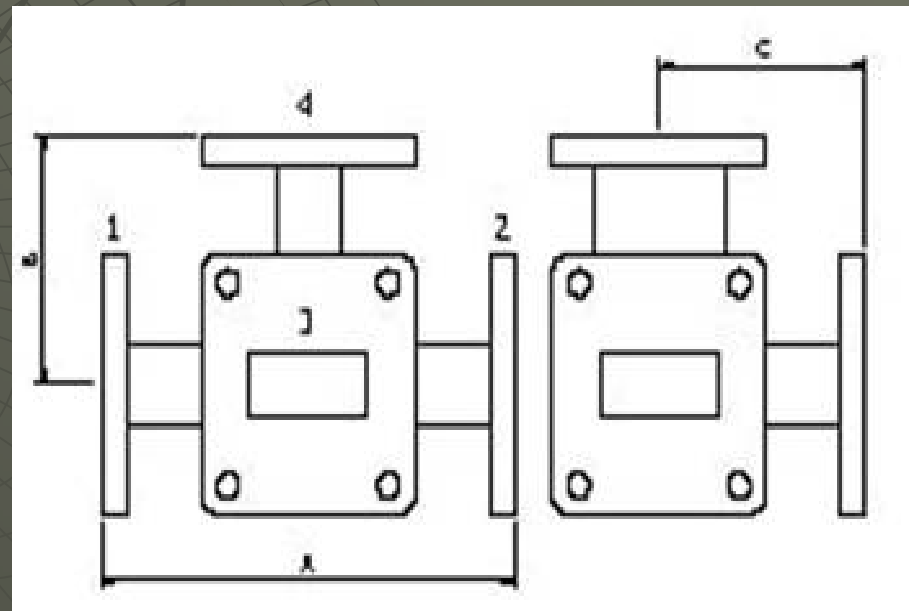
Frequency (MHz)	VSWR typical	Average Power (Watts)	Impedance (ohms)	No. of Sections
0.2-10	1.5:1	15	50*	3-9
10-200	1.5:1	15	50*	3-9
150-1000	1.5:1	10	50*	3-9

# High pass Filters



# WAVEGUIDE TEE

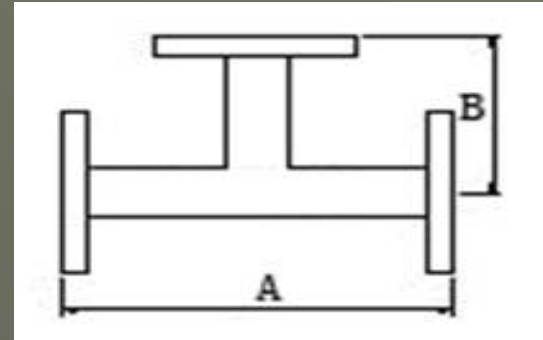
- Waveguide Magic Tee
- 1.70-12.4 GHz
- VSWR=MAIN LINE 1.15
- SECONDLINE 1.35



# WAVEGUIDE TEE

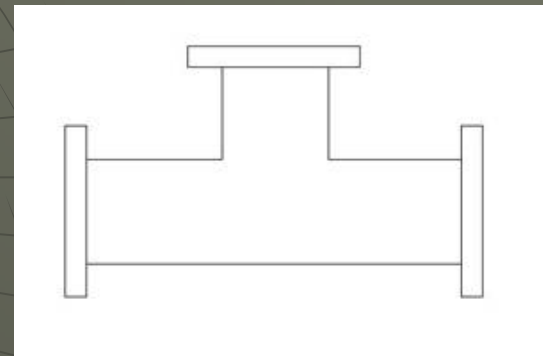
## ➤ Waveguide ET

- 1.12-40.0 GHZ
- VSWR=1.50



## ➤ Waveguide HT

- 1.12-40.0 GHZ
- VSWR=1.50

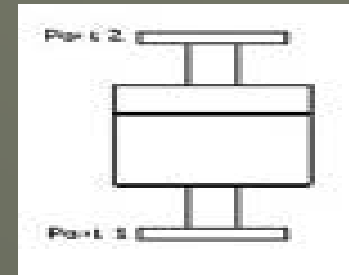




# WAVVGUIDE SINGLE JOINT

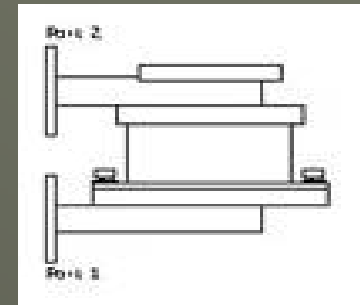
## ➤ A: I Type

- 2.60-40.0 GHZ
- VSWR=1.20-1.40



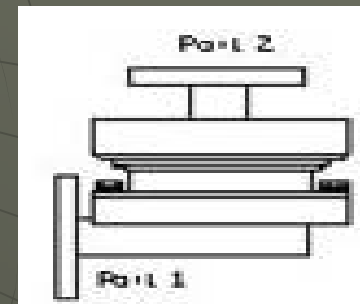
## ➤ B: U Type

- 2.60-40.0 GHZ
- VSWR=1.20-1.40



## ➤ C: L Type

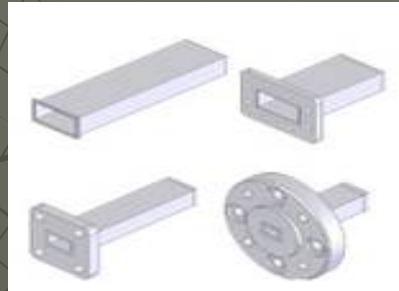
- 2.60-40.0 GHZ
- VSWR=1.20-1.40



# WAVE GUIDE DUUMMY LOAD

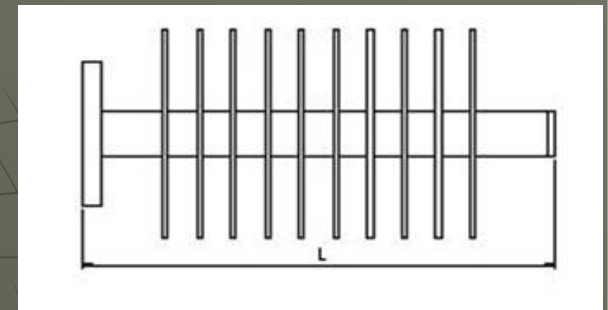
## ➤ Waveguide Low Power Load

- 0.75-110.0 GHZ
- VSWR=1.05-1.10



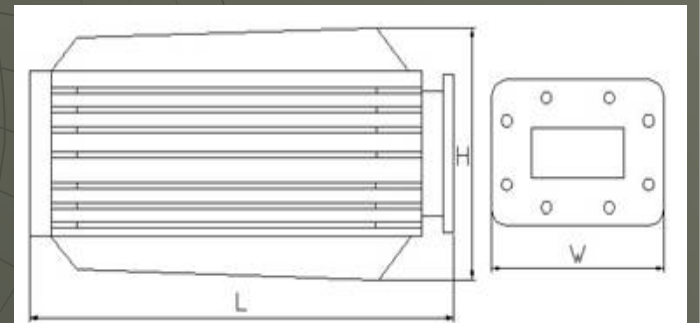
## ➤ Waveguide Medium Power Load

- 1.45-40.0 GHZ
- VSWR=1.25



## ➤ Waveguide High Power Load

- 1.45-40.0 GHZ
- VSWR=1.35



# WAVEGUIDE ATTENUATOR

## ➤ Waveguide Fixed Attenuator

➤ 1.45-40.0 GHZ

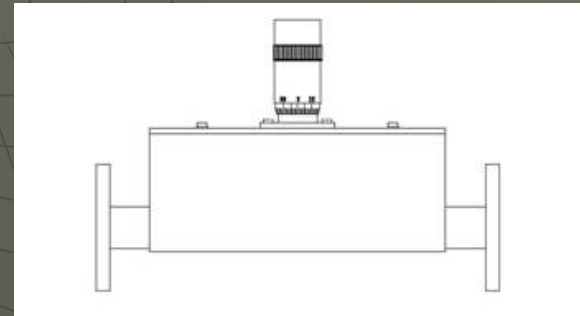
➤ VSWR=1.25



## ➤ Waveguide Variable Attenuator

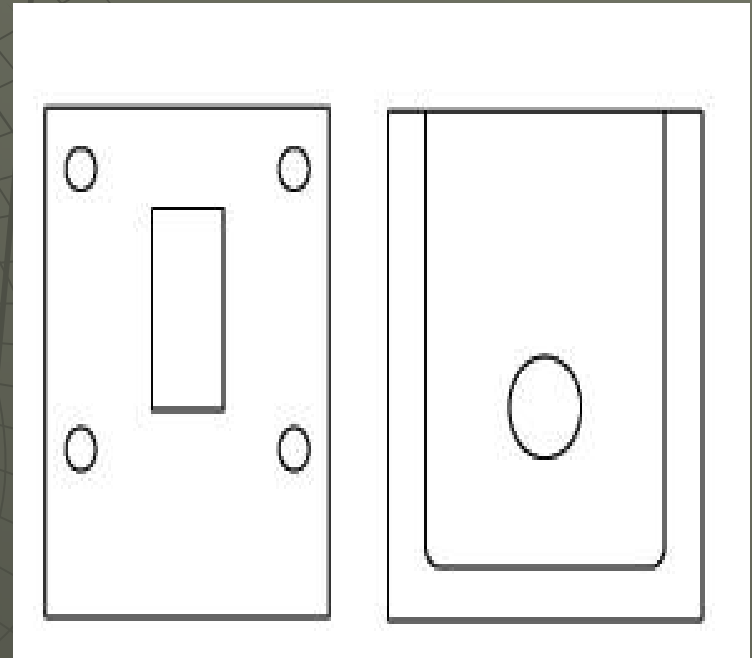
➤ 7.05-40 GHZ

➤ VSWR=1.25



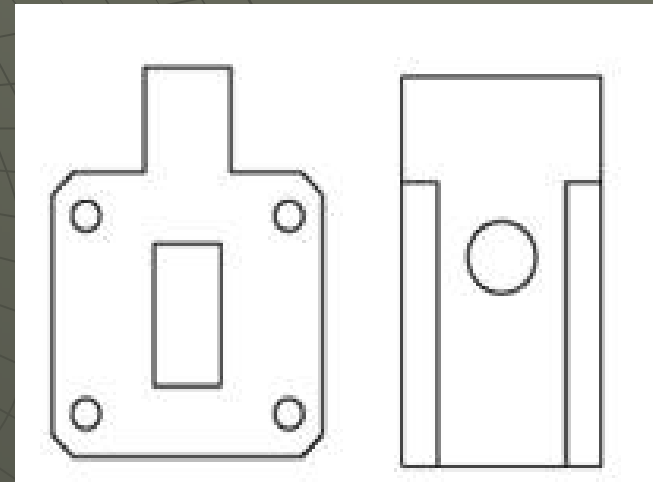
# WAVEGUIDE CIRCULATOR

- Waveguide Circulator
- 2.70-27.0 GHz
- VSWR=1.25



# WAVEGUIDE ISOLATOR

- Waveguide Isolator
- 3.13-27.0 GHz
- VSWR=1.25



# ELECTRIC DOUBLE RIDGE WAVEGUIDE SWITCH

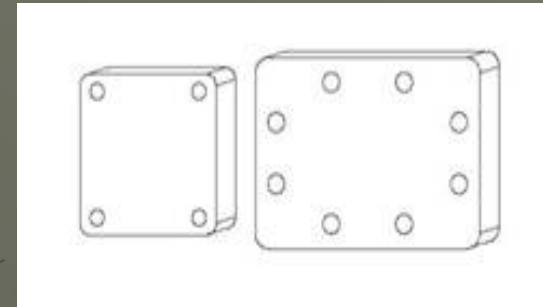
- Electric Double Ridge Waveguide Switch
- 5.8-40.0 GHz
- VSWR=1.2



# WAVEGUIDE SHORT PLATS

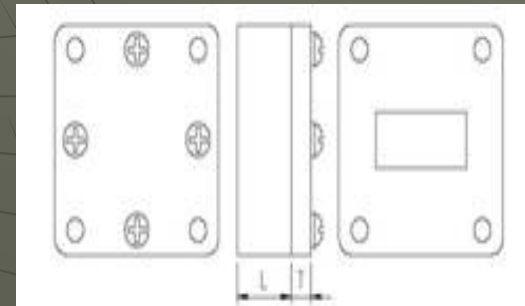
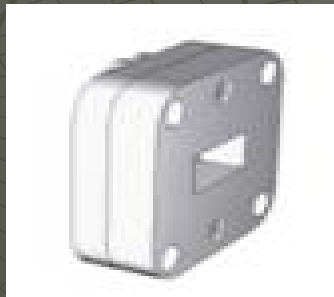
## ➤ Waveguide Short Plates

- 0.75-110.0 GHZ
- VSWR=1.05-1.10



## ➤ 1/4 Waveguide Offset Short

- 0.75-110.0 GHZ
- VSWR=50



# FLEXIBLE WAVEGUIDE

- Flexible Waveguide
- 1.70-40.0 GHZ
- VSWR=115-140





# WAVEGUIDE FLEXIBLE TWIST

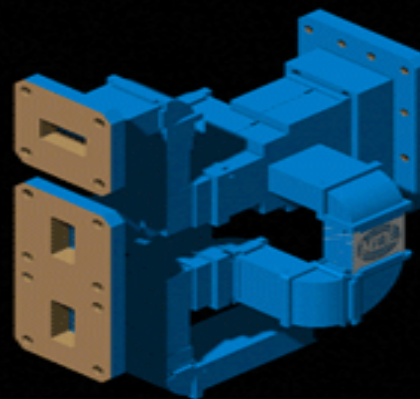
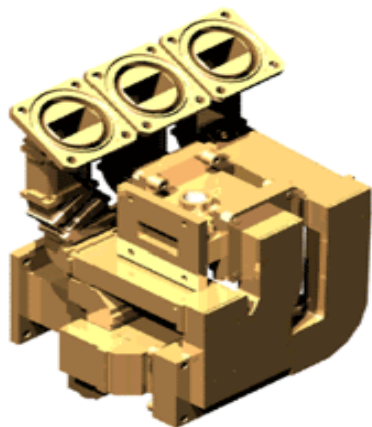
- Waveguide flexible twist
- 4.90-18.0 GHz
- VSWR=1.15-1.20



# WAVEGUIDE ELLIPTICAL

- Elliptical Waveguide
- 2.5-19.7 GHz
- VSWR=1.30





*Thank You*



*Business Development Department*